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# The Menominee Iron Region and its Flora.—II.

BY E. J. HILL.

Leaving Escanaba the next morning, I went from this important shipping port for iron to the iron region proper. The village of Quinnesec, the oldest in the mining section, was chosen as a center, from which to make excursions in various directions. It is located on the southern slope of the Iron Range, a low ridge running a little north of west, in which most of the iron mines of the Menominee are found. To the west is Iron Mountain and its cluster of mines; eastward are Norway, Vulcan and the Breen mine, places where many mines are opened. This ridge crosses the Menominee River, into Wisconsin, where are other mines, but my excursions were confined to that part lying in Michigan, as far east as the Sturgeon River. After cutting through the range, the Menominee bends eastward, and for a while runs nearly parallel with it It is often rapid, from the rocks in its bed, and has two waterfalls in the vicinity of Quinnesec, the Big and the Little Quinnesec Falls, where there is a rapid change of levels, of eighty and fifty feet, respectively, each fall occupying a space of the river's course two r three times as great. As a considerable volume of water passes down these steep rapids, they are well worthy of a visit, but are now somewhat marred by the "chutes" the lumbermen have blasted through the rocks along their banks, to make a safer grade for the passage of logs. The smaller of the two, the upper, is being utilized for compressing air, to take the place of steam in the numerous mines at Iron Mountain, whither it is to be conveyed several miles in a large pipe. South of the lower fall, the Sturgeon River enters the Menominee, crossing the Iron Range from the north, also with rapids and falls and wild gorges, particularly where it cuts through the adjoining quartzites lying northward. South of the ridge the land is mostly a pine plain. On the north slope, and in the valley of Pine River, a branch of the Sturgeon from the west, the land is richer, and the hard woods are more abundant, as well as on the less sandy parts of the range itself and the quartzite formation.

The three lakes already mentioned are but a short distance from Quinnesec, and easily reached on foot or by cars. The outlets of Lakes Antoine and Fumee cross the southern barrier and enter the Menominee. Lake Hanbury lies south of the range, hence the botanical collector gets a varied field for examination.

Where the ground had been freed from timber by the ax or fire, there was but little variety, the Bracken Fern (*Pteris aquilina*) often almost hiding the ground. Interspersed were the blackberry, red raspberry, and the Hispid Aralia. The trees taking the place of the old ones were the two poplars, *P. tremuloides* and *P. grandidentata*, *Betula papyracea*, and the oaks, *Quercus coccinea* and *Q. rubra*, rather small and shrubby. On the whole, these desolated tracts were a barren, uninviting field for exploration. In clearings and burnt districts the tall, symmetrical form of *Arabis perfoliata*, Lam., was noticeable. *Epilobium angustifoliun* was everywhere present in such localities. Here, also, was found *Physalis grandiflora*, Hook., with large, white flowers, the largest of the genus in our flora, a representative of the Lake Superior district.

*Waldsteinia fragarioides*, Tratt, was seen throughout on the hills and in dry open woods. In similar places was *Cynoglossum Virginicum*, L., replacing *C. officinale* as a weed. Dense patches of the white-flowered raspberry (*Rubus Nutkanus*, Moçino) were often met with, so like the purple-flowered in foliage and general appearance, differing mainly in its large white flowers. On the high hills grew the Mountain Alder (*Alnus viridis*, DC.), now in fruit, and bearing quite a close resemblance to small forms of its relative, *Betula pumila*, L , found in bogs farther south. The soil of these hills is a sandy or clayey loam, usually thin, stony and reddish, from the presence of iron oxides. Where firm and more solid, the maple, elm, basswood, birch hemlocks and other hardwoods grow, making quite a dense and heavy forest growth.

On the lower sandy hills and pine plains, largely covered with a thick growth of *Pinus resinosa*, if the forest was still intact, a different flora is seen, not indeed exclusively confined to them, but characteristic. It is not extremelv varied, but always interesting, the Ericaceæ predominating. Among the more noticeable plants were *Moneses uniflora*, various Pyrolas, *Monotropa Hypopitys*, L., *Lysimachia quadrifolia*, L., the grass *Brachyelytrum aristatum*, Beauv., *Vaccinium Canadense*, *V. Pennsylvanicum*, and *Gaultheria procumbens*. The low blueberry, from the middle to the 25th of July, was ripening its fruit abundantly, producing the largest and finest berries I had ever seen, which could be picked by the handful from almost any bush, and with which the appetite was often satisfied on these solitary walks. The greatest profusion of fruit was in the open woods, or where the trees had been removed from tracts not yet overrun by taller shrubs. The ground was also reddened in many spots by the ripe fruit of the common wintergreen Birds were not abundant, a fact I had noticed two years before at Sault St. Marie, and the berries are so plentiful that even if they were a vast number would be left untouched. In the open plains grew great quantities of *Polygala polygama*, Walt , with aerial and subterranean stems branching by the score from a single root, making a large tuft of stems, seemingly to rival Vaccinium and Gaultheria in the effort to keep the ground stocked with seed. And it doubtless had one advantage from its floral habit, its seeds being planted from the first.

In the colder and denser woods, where the white pine and hemlock were more common, the fetid-current, *Ribes prostratum*, L'Her., frequently occurred. In such places, growing among the moss, the dwarf Pyrola (*P. secunda*, var. *pumila*), was not uncommon. Here also, or in higher lands by streams, or in damp woods, was the prettiest of the wood-sorrels, *Oxalis Acetosella*, L., with handsome flowers of purple and white.

Along the streams in copses grew a large-leaved honeysuckle, *Lonicera hirsuta*, Eaton. In open, grassy places, or on the rocky banks of streams, the common strawberry was *Fragaria vesca*, L., almost wholly replacing *F. Virginiana*. The latter was also found, but not very abundantly, in such situations. *F. vesca* was plainly native. Its fruit, sometimes three-fourths of an inch long, often as tapering as a sugar loaf, as well as having the achenia superficial, is quite in contrast with that of its congener. In the muddy places of a stream that drains a swamp at Nornay was gathered the terrestrial form of *Callitriche verna*, L. Growing along with it, the water having been dried away, was a terrestrial form of *Hippuris vulgaris*, fruiting at a height of two to six inches, and seemingly at first sight a plant quite unlike the ordinary one found in water. It was dwarfed by drought, and showed that water was not absolutely necessary to its existence, though the want of it materially affected its size.

In the peat bogs, and cedar and tamarack swamps, the vegetation was quite different. *Cypripedium spectabile* was found in bloom in one at Norvay as late as July 18th. I was also able to get *Ledum latifolium*, Ait., and *Valeriana sylvatica*, Richards, in flower at the same time and place. In the bogs by the side of Hanbury Lake, *Habenaria dilata*, Gray, was common. *Eriophorum vaginatum* also grew here. Orchids in the contiguous cedar swamp were *H. obtusata*, Richardson, here, as elsewhere, exhibiting a great variety in the form of its leaves, so that a number of specimens are needed to exhaust the list of them. *H. orbiculata*, Torr., with its two large leaves close to the ground, round or roundish in outline, was another kind. A single specimen only of *Listera cordata*, R. Brown, was seen, though more were diligently sought after In the cedar swamp at the west end of Lake Fumee, near the Norvay mine located there, I came across *Habenaria rotundifolia*, Richardson, with handsome rose-purple flowers. The leaves were generally oblong. I had never seen it till then, and it is evidently quite rare from the few stations assigned it. It is not mentioned in any catalogue of Michigan plants. *Pyrola rotundifolia*, L., var. *uliginosa*, Gray, grew in the same locality. Deep beds of moss often covered the dryer places of these swamps, aside from species of *Sphagnum* that everywhere formed a covering in damper parts among the tamaracks and cedars. Species of *Dicranum* and *Hypnum* were particularly abundant, as *Dicranum scoparium*, Hedw., and *D. undulatum*, James, growing upon the hummocks.

A day was taken for Lake Antoine, a beautiful expanse of water near Iron Mountain, but not many new things rewarded the search. *Danthonia spicata*, Beauv., grew along its rocky shores, varying a little in some characters, *Habenaria Hookeri*, Torr., and *Liparis Loeselii*, Richard., were found in the adjoining open woods. *Eleocharis palustris*, R. Br., var. *calva*, Gray, grew on the wet gravelly shores, and *Eriocaulon septangulare* in the shallow water. In neighboring sloughs *Utricularia intermedia*, Hayne, abounded.

The rock-flora is still to be mentioned, not an insignificant factor in a region where there are so many outcrops and ledges, into which streams had cut deep channels, and were often hemmed in by high cliffs. Precipitous ledges were met with in the midst of the woods, their crevices being occupied by mosses and ferns, among which other plants gained a foothold. *Polypodium vulgare* and *Cystopteris fragilis* were among the most usual ferns. *Woodsia Ilvensis*, R. Br., was found near the lower falls of the Quinnesec. *Corydalis aurea*, Willd., grew in large mats on the rocks at the same place, and on those of the hills at Quinnesec, its stems sometimes being three feet long, many branching from the same root. I had never before seen such a luxurious growth of it. The petals were wing crested and pointed, varying towards *C. flavula*, Raf., but it can only be called an intermediate form, though the common descriptions do not embrace its characters. Other gatherings here were *Oenothera pumila*, L., and the little moss, *Rhabdoweisia fugax*, Br., & Sch. At the Sandy

Portage, a few miles down the river, *Hypericum Kalmianum*, L., grew in hollow places of the rocks near the water, quite different in habitat from that in the wettish sands at the head of Lake Michigan. *Rhabdoweisia fugax* also grows in the dry sands near Englewood, and at Whitings, Ind. The hare-bell, *Campanula rotundifolia*, was everywhere abundant in such places.

On ledges of the Iron Range at Quinnesec were gathered *Dracocephalum parviflorum*, Nutt., with purple flowers, and *Symphoricarpos racemosus*, Michx., var. *pauciflorus*, Robbins, and *Bromus Kalmii*, Gray. On the cliffs of the stream which forms the outlet of Lake Fumee, which has several pretty waterfalls as it crosses the Iron Range to the river below, was a form of *Arabis Drummondii*, Gray, with rose-colored petals scarcely longer than the calyx Covering the faces of the dripping rocks *Hypnum filicinum*, L , grew in large sheets.

One more moss may be mentioned, of quite singular appearance, growing by paths in sandy and clayey woods, *Trematodon longicollis*, Rich. Nor must an introduced plant, found near the railroad at Vulcan, be omitted, *Echium vulgare*, L., that has taken a long stride northward and become well established.

The foregoing is not designed to be a complete account of even the summer flora of the Iron Region, but only as indicative of some of its more striking features, such as interested the writer, and presumably may also interest others. Many mosses were collected, the greater part of which still remain to be critically studied, having been partly left in anticipation of the work of Lesquereux and James, since the reception of which time has not been at command. But so far as studied, the moss flora does not materially differ from that already made out for the region around Sault St. Marie, and at Mackinaw, and the northern counties of the southern peninsula of Michigan, where several summers have been spent more or less in personal investigation. It is varied and luxuriant, and has features that, to some extent, characterize that of Lake Superior, or even British America.

## GENERAL NOTES.

**A New Classification of Plant Tissues.**—In Dr. G. Haberlandt's recent work on the "Physiological Anatomy of Plants," published by Engelmann, of Leipzig, there are several changes in doctrine which teachers and workers would do well to note, and adopt or not as they see fit. Sachs' "Fundamental System" of tissues is rejected, as we think, with good reason. It could only be